



**POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT**

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	3890008946

II. SITE NAME AND LOCATION

01 SITE NAME (Name, common, or descriptive name of site) Argonne National Laboratory-Illinois (ANL-IL) Building 330, CP-5		02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER 9700 South Cass Avenue	
03 CITY Argonne	04 STATE IL	05 ZIP CODE 60439	06 COUNTY DuPage
06 COORDINATES LATITUDE 41° 42' 21.0"		LONGITUDE 87° 59' 4.0"	

10 DIRECTIONS TO SITE (starting from nearest public road) From I-55, exit south on Cass Ave. Turn west on Northgate Road to enter ANL. Building 330 is at the west end of Rock Road (west of Meridian Road) on the ANL site.

III. RESPONSIBLE PARTIES

01 OWNER (if known) U.S. Department of Energy (DOE-CH)		02 STREET (if known, listing, residential) 9800 South Cass Avenue	
03 CITY Argonne	04 STATE IL	05 ZIP CODE 60439	06 TELEPHONE NUMBER (312) 972-2271
07 OPERATOR (if known and different from owner) Argonne National Laboratory		08 STREET (if known, listing, residential) 9700 South Cass Avenue	
09 CITY Argonne	10 STATE IL	11 ZIP CODE 60439	12 TELEPHONE NUMBER (312) 972-3998
13 TYPE OF OWNERSHIP (Check one) <input type="checkbox"/> A. PRIVATE <input checked="" type="checkbox"/> B. FEDERAL <u>DOE-CH</u> <input type="checkbox"/> C. STATE <input type="checkbox"/> D. COUNTY <input type="checkbox"/> E. MUNICIPAL <input type="checkbox"/> F. OTHER _____ (Specify) <input type="checkbox"/> G. UNKNOWN			

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check at least one)

☐ A RCRA 3001 DATE RECEIVED: _____ ☐ B UNCONTROLLED WASTE SITE (RCRA 103(c)) DATE RECEIVED: _____ ☒ C NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION <input checked="" type="checkbox"/> YES DATE _____ <input type="checkbox"/> NO MONTH DAY YEAR		BY (Check all that apply) <input type="checkbox"/> A. EPA <input type="checkbox"/> B. EPA CONTRACTOR <input type="checkbox"/> C. STATE <input type="checkbox"/> D. OTHER CONTRACTOR <input type="checkbox"/> E. LOCAL HEALTH OFFICIAL <input type="checkbox"/> F. OTHER _____ (Specify)	
02 SITE STATUS (Check one) <input type="checkbox"/> A. ACTIVE <input type="checkbox"/> B. INACTIVE <input type="checkbox"/> C. UNKNOWN		03 YEARS OF OPERATION BEGINNING YEAR: <u>1953</u> ENDING YEAR: <u>1979</u> <input type="checkbox"/> UNKNOWN	

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED

Fission product radioisotopes, uranium, tritiated water, and lead shielding are present.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION

There is a potential for contamination of groundwater and soil with radioactivity. There is a continuing emission of tritiated water vapor to the atmosphere pending decommissioning.

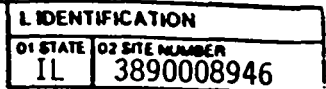
V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Materials)			
<input type="checkbox"/> A. HIGH (inspection required promptly)	<input type="checkbox"/> B. MEDIUM (inspection required)	<input checked="" type="checkbox"/> C. LOW (inspect on time available basis)	<input type="checkbox"/> D. NONE (no further action needed - complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT Barry Fritz	02 OF (Agency/ Organization) DOE-CH, Operational & Envir. Safety Division		03 TELEPHONE NUMBER (312) 972-2271
04 PERSON RESPONSIBLE FOR ASSESSMENT C. L. Cheever	05 AGENCY DOE	06 ORGANIZATION ANL-IL	07 TELEPHONE NUMBER (312) 972-3311
08 DATE 4, 4, 88 MONTH DAY YEAR			





*1,100 tons of radioactive waste are estimated to result from decommissioning activities.



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PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
11 3890008946

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 28,000 04 NARRATIVE DESCRIPTION

SEE ATTACHED

01 ☒ B. SURFACE WATER CONTAMINATION 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 3,500 04 NARRATIVE DESCRIPTION
Irrigated water vapor in stack effluent can be rained out of the atmosphere and potentially contaminate surface water in the vicinity of CP-5.

01 ☒ C. CONTAMINATION OF AIR 02 ☒ OBSERVED (DATE 3/29/88) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 39,000 04 NARRATIVE DESCRIPTION
The ANL fenceline dose is less than .1% of EPA standards for public exposure due to the ongoing emission of tritiated water vapor from CP-5 pending decommissioning. Tritiated water vapor releases to the air have been measured. (Ref. (1) p. 30)
Population = 3000 employees + 36,000 residents within three miles.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☐ E. DIRECT CONTACT 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

01 ☒ F. CONTAMINATION OF SOIL 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED 1 04 NARRATIVE DESCRIPTION
The potential for soil contamination is from the yard and under floor storage of radioactive components.

01 ☒ G. DRINKING WATER CONTAMINATION 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED 28,000 04 NARRATIVE DESCRIPTION

SEE ATTACHED

01 ☒ H. WORKER EXPOSURE/INJURY 02 ☐ OBSERVED (DATE _____) ☒ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED 15 04 NARRATIVE DESCRIPTION

Radioactive equipment used at the site currently remains in the building and yard area. The storage of this equipment onsite could potentially result in employee exposure to low-level radioactivity.

01 ☐ I. POPULATION EXPOSURE/INJURY 02 ☐ OBSERVED (DATE _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED _____ 04 NARRATIVE DESCRIPTION

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

Building 330, CP-5

II. 01A Groundwater Contamination

There is a potential for groundwater contamination from stored radioactive items. Groundwater in some of the ANL-IL area is in the perched condition because of the underlying silty clay. This clay can restrict downward water flow and create a lateral perched water-flow condition. The groundwater pattern in the area would probably follow the area topography, flowing south-easterly toward the Des Plaines River. Contaminated water may percolate downward into the perched groundwater and migrate in a southeasterly direction offsite. (Ref. (5), p.2)

Population = 3,000 employees + 25,000 residents within three miles and north of the Des Plaines River.

II. 01 G Drinking Water Contamination

There is a potential for radioactivity to migrate to groundwater and to the drinking-water aquifer. There has not been recognizable contamination of ANL-IL drinking water from this source.

In the vicinity of ANL-IL, only subsurface water (from both shallow and deep aquifers) and Lake Michigan water are used for drinking purposes. The potential for contamination of groundwater used for drinking purposes does exist. Two principal aquifers are used as water supplies in the vicinity of ANL-IL. The upper aquifer is the Niagaran-Alexandrian dolomite, which is about 200-ft. thick in the ANL-IL area and has a piezometric surface between 50 and 100 ft. below the ground surface. The lower aquifer is the Galesville sandstone which lies between 490 and 1500 ft. below the surface. Maquoketa shale separates the aquifers and retards hydraulic connection between the aquifers.

The four domestic water wells currently in use at ANL-IL are about 300-ft. deep in the Niagaran dolomite. All four wells are located northeast of the site. The nearest well is approximately 4500 ft. northeast of the site. Together the four wells serve the more than 3,000 employees of the facility.

Population = 3,000 employees plus 25,000 residents within three miles and north of the Des Plaines River.

(Ref. (1) p. 8,12; Ref. (3) p. 6; Ref. (5) p. 1-2)



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PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE 02 SITE NUMBER
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II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☐ J. DAMAGE TO FLORA
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

01 ☐ K. DAMAGE TO FAUNA
04 NARRATIVE DESCRIPTION (include name(s) of species)

02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

01 ☐ L. CONTAMINATION OF FOOD CHAIN
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES
(Spills, runoff/standing liquids/leaking drums)

02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

01 ☐ N. DAMAGE TO OFFSITE PROPERTY
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING
04 NARRATIVE DESCRIPTION

02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

III. TOTAL POPULATION POTENTIALLY AFFECTED: See Attached

IV. COMMENTS

All reactor fuel has been removed from the site. The heavy water system of the site has been drained, but heavy water residuals do remain. The decontamination and decommissioning of the site is pending DOE funding.

V. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

- (1) 1986 Annual Site Environmental Report for Argonne National Laboratory (Report #ANL-87-9) by N. Golchert and T. Duffy.
- (2) Phase I CERCLA Program, ANL-IL Installation Assessment Report (required by DOE order 5480.14), July 1986.

CONTINUATION SHEET

Part 3 - Description of Hazardous Conditions and Incidents

ANL-IL

IL 3890008946

Building 330, CP-5

III. Total Population Potentially Affected

39,000 (3,000 employees plus 36,000 residents within three miles) (Ref. (1) p. 8).

V. Sources of Information (Continued)

- (3) 1988 Inventory of Federal Hazardous Waste Activities (for ANL-IL).
- (5) ANL-IL Intra-Laboratory Memo; S. Y. Tsai to N. W. Golchert; Subject: Groundwater Monitoring Plan for the 317-319 Area; September 17, 1985.
- (6) Site Plan (ANL-IL Map), January 9, 1986.
- (7) ANL Map with PA legend, April 1988.
- (28) Environmental Assessment Related to the Decontamination and Decommissioning of the Argonne National Laboratory CP-5 Research Reactor; by ANL-IL, January 1982, p. 1-3.

Summary Report for Preliminary Assessment of the ANL-IL

Building 330, CP-5

4/13/88

The shutdown CP-5 research reactor, which operated at 5 megawatts as a neutron source for research, is a potential source of environmental contamination pending decommissioning. The reactor fuel has been removed but irradiated heavy water residual causes tritiated water vapor release through the exhaust stack. The calculated fenceline dose from this release is less than .1% of the EPA standard for public exposure. The radioactive components stored in the CP-5 yard and in underfloor storage tubes are also a potential source of contamination.

- Recommendations:
- (1) Conduct additional monitoring to assess the potential for groundwater contamination.
 - (2) Complete a Site Investigation (SI).
 - (3) Continue to request DOE funding for decommissioning (or partial decommissioning).